AMENDMENTS TO THE CLAIMS WITH MARKINGS TO SHOW CHANGES MADE, AND LISTING OF ALL CLAIMS WITH PROPER INDENTIFIERS

1. (Original) A chain tensioner, comprising:

a tensioner piston bearing upon a chain;

a cylinder guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber for receiving hydraulic fluid;

a leakage gap for migration of hydraulic fluid from the pressure chamber; and

a control member for at least reducing the leakage gap in size, when a pressure in the pressure chamber increases.

2. (Original) The tensioner of claim 1, wherein the control member is a valve having a valve body for bounding the leakage gap, said valve body being configured for displacement to at least reduce the leakage gap in size, when the pressure in the pressure chamber increases.

3. (Original) The tensioner of claim 2, wherein the valve body clears the leakage gap, when the pressure in the pressure chamber drops below a critical lower level, and at least reduces the leakage gap in size, when the pressure in the pressure chamber exceeds a critical upper level.

4. (Original) The tensioner of claim 2, and further comprising a first stop, wherein the valve body clears the leakage gap, when abutting against the first stop.

5. (Original) The tensioner of claim 4, wherein the first stop is formed by a valve seat, which defines the leakage gap in concert with the valve body.

6. (Original) The tensioner of claim 4, and further comprising a valve spring for biasing the valve body against the first stop.

7. (Original) The tensioner of claim 2, and further comprising a second stop, wherein the valve body is configured to abut the second stop, when the pressure in the pressure chamber increases to thereby at least reduce the leakage gap in size.

8. (Original) The tensioner of claim 7, wherein the second stop forms a valve seat for the valve body.

9. (Original) The tensioner of claim 6, wherein the valve body is moved away from the first stop in opposition to a spring action applied by the valve spring, as the pressure in the pressure chamber increases.

10. (Original) The tensioner of claim 1, wherein the control member is a valve in communication with the pressure chamber.

11. (Original) The tensioner of claim 1, wherein the leakage gap is subdivided in a first leakage gap portion and a second leakage gap portion, wherein the control member clears the first leakage gap portion, when the pressure in the pressure chamber drops below a critical lower level, and at least reduces the second leakage gap portion in size, when the pressure in the pressure chamber exceeds a critical upper level.

12. (Original) The tensioner of claim 11, wherein the control member is a valve having a valve body which closes the second leakage gap portion, when the pressure in the pressure chamber exceeds the critical upper level.

13. (Original) The tensioner of claim 12, and further comprising a first stop, wherein the valve body abuts against the first stop to clear the second leakage gap portion, when the pressure in the pressure chamber drops below the critical lower level.

14. (Original) The tensioner of claim 12, and further comprising a second stop, wherein the valve body abuts against the second stop to at least reduce the second leakage gap portion in size, when the pressure in the pressure chamber exceeds the critical upper level.

15. (Original) The tensioner of claim 13, and further comprising a valve spring for biasing the valve body against the first stop.

16. (Original) The tensioner of claim 13, wherein the first stop is formed as valve seat for the valve body.

17. (Original) The tensioner of claim 14, wherein the second stop is formed as valve seat for the valve body.

18. (Original) The tensioner of claim 13, and further comprising a second stop, wherein the valve body abuts against the second stop to at least reduce the second leakage gap in size, when the pressure in the pressure chamber exceeds the critical upper level, wherein the valve body is disposed between the first and second stops.

19. (Original) The tensioner of claim 2, wherein the valve body is configured as plunger, which is guided in the cylinder for longitudinal displacement.

20. (Original) The tensioner of claim 19, wherein the plunger defines the leakage gap in concert with the cylinder.

21. (Original) The tensioner of claim 19, and further comprising a valve spring for biasing the plunger in a direction toward a first stop, said piston clearing the leakage gap, when abutting against the first stop.

22. (Original) The tensioner of claim 21, wherein the plunger is moved away from the first stop to abut against a second stop, when the pressure in the pressure chamber exceeds the upper critical level, to thereby close the leakage gap.

23. (Original) The tensioner of claim 22, wherein the second stop has a seat area for the plunger, whereby the piston is configured to tightly bear against the seat area.

24. (Original) The tensioner of claim 19, and further comprising a check valve integrated in the plunger, so that the plunger and the check valve form a structural unit.

Claims 25 and 26 (cancelled).

27. (Currently Amended) The chain tensioner of claim ~~26~~ 28, wherein the first seat is formed with circumferential grooves to define the passageways.

28. (Currently Amended) ~~The~~ A chain tensioner ~~of claim 26~~, comprising:

a tensioner piston bearing upon a chain;

a cylinder guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber for receiving hydraulic fluid; and

a control member for regulating a fluid flow through a leakage gap to the outside in dependence on a pressure in the pressure chamber to thereby adjust a damping behavior during operation, wherein the control member is movable between first and second stops and spring-biased to seek a position against a first stop, wherein the first stop has passageways to allow seepage of hydraulic fluid through the leakage gap, wherein the control member moves toward the second stop to at least reduce the fluid flow through the leakage gap, as the pressure in the pressure chamber rises.

29. (Currently Amended) The chain tensioner of claim ~~26~~ 28, wherein the control member is a ball valve disposed between the first and second stops.

30. (Currently Amended) The chain tensioner of claim ~~26~~ 28, wherein the control member is a plunger disposed between the first and second stops.

Claim 31 (cancelled)

32. (Currently Amended) ~~The~~ A chain tensioner ~~of claim 31~~, comprising:

a tensioner piston bearing upon a chain;

a cylinder guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber for receiving hydraulic fluid;

a first leakage gap formed between adjacent wall surfaces of the cylinder and the piston for migration of hydraulic fluid from the pressure chamber;

a second leakage gap for migration of hydraulic fluid from the pressure chamber; and

a control member ~~wherein the control member reduces~~ for reducing a fluid flow through the second leakage gap, as the pressure in the pressure chamber rises.

33. (Original) The chain tensioner of claim 32, wherein the control member closes the second leakage gap, when the pressure in the pressure chamber exceeds an upper limit.

REMARKS

The last Office Action of December 3, 2002 has been carefully considered. Reconsideration of the instant application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 1-33 are pending in the application. Claims 27-30, 32 have been amended. Claims 25, 26 and 31 have been cancelled. No claims have been added.

Claims 1-10, 19-21 and 24-33 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,361,458 (hereinafter "Smith").

It is noted with appreciation that claims 11-18, 22 and 23 are indicated allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. However, applicants wish to defer amendments to these dependent claims in view of the arguments presented below regarding independent claims 1, 28 and 32.

The rejection under 35 U.S.C. 102(a) (e) is respectfully traversed.

The present invention, as set forth in claims 1, 28 and 32, is directed to a chain tensioner which is constructed to adjust the damping action upon the piston. Although a soft damping action is desired to avoid loud noises, there is associated therewith the problem that hard chain knock may force the piston far enough into the pressure chamber that ultimately the piston can no longer be sufficiently dampened in the presence of rapid succession of chain knocks (compare [0005] of the instant specification). In accordance with the present invention, the damping

behavior of the chain tensioner is controlled in dependence on the pressure in the pressure chamber by providing a control member which **reduces** a leakage gap in size, when the pressure in the pressure chamber increases, i.e. exceeds a critical level. As a result, the amount of hydraulic fluid, escaping the pressure chamber is **decreased** so that the characteristic damping curve of the chain tensioner is made **harder** to prevent the piston from moving excessively into the pressure chamber, so that the damping function is retained.

While claim 1, as originally filed, clearly sets forth the reduction in size of the leakage gap, as the pressure in the pressure chamber increases, applicants have now canceled original independent claims 25 and 31 in favor of claims 28 and 32, respectively, which have been rewritten in independent form to include only those limitations of originally filed claims 28 and 32, respectively. Accordingly, applicants assert that claim 28 and 32 have not been narrowed to trigger prosecution history estoppel. Hereby, claim 28 in particular sets forth a specific configuration of the chain tensioner according to the present invention in order to restrict a flow from the pressure chamber. Reference is also made in this context to [0032] of the instant specification.

The Smith reference is directed to a hydraulic tensioner having a piston slidably received in a cylinder, and a pressure relief valve positioned in the nose of the piston. In the passage on col. 4, lines 33-38, to which the Examiner specifically referred, it is described that the valve moves away from its seat, when the pressure in the pressure chamber exceeds a predetermined maximum level, so as to release fluid. The Smith reference substantially corresponds to the admitted

prior art discussed in the instant specification (paragraph [0003] of the instant specification), and thus describes a construction that entails an action that the present invention, in fact, tries to prevent. While in the present invention, the construction of the chain tensioner **reduces** an escape of hydraulic fluid from the pressure chamber, as the size of the leakage gap is reduced so as to make the damping action of the chain tensioner **harder**, the Smith reference **promotes** an escape of flow of fluid from the pressure chamber so that the damping action becomes indeed **softer**.

Applicants therefore respectfully disagree with the Examiner's assertion that the valve in Smith reduces a fluid flow, as the pressure in the pressure chamber rises. The valve merely opens to allow escape of fluid from the pressure chamber.

For the reasons set forth above, it is applicant's contention that Smith neither teaches nor suggests the features of the present invention, as recited in claims 1, 28 and 32.

As for the rejection of the retained dependent claims, these claims depend on claims 1, 28 and 32, share their presumably allowable features, and therefore it is respectfully submitted that these claims should also be allowed.

Withdrawal of the rejection under 35 U.S.C. §102(e) and allowance of claims 1-24, 27-30, 32, 33 is thus respectfully requested.

Applicant has also carefully scrutinized the further cited prior art and finds it without any relevance to the newly submitted claims. It is thus felt that no specific discussion thereof is necessary.

In view of the above presented remarks and amendments, it is respectfully submitted that all claims on file should be considered patentably differentiated over the art and should be allowed.

Applicant further submits a certified copy of the priority document under 35 U.S.C. §119(a)-(d).

Reconsideration and allowance of the present application are respectfully requested.

Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully requested that such changes be made by Examiner's Amendment, if the Examiner feels this would facilitate passage of the case to issuance. If the Examiner feels that it might be helpful in advancing this case by calling the undersigned, applicant would greatly appreciate such a telephone interview.

Respectfully submitted,

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